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Improvement Programs through Systems Management In Relation to Mine Development

P Graham¹ and B Miller¹

IMPROVEMENT PROGRAMS THROUGH SYSTEMS MANAGEMENT

“Every morning in Africa, a gazelle wakes up. It knows it must run faster than the fastest lion or it will be killed. Every morning a lion wakes up. It knows it must outrun the slowest gazelle or it will starve to death. It doesn’t matter whether you’re a lion or a gazelle; when the sun comes up, you had better start running.”

old Ugandan Proverb (anon)

General experience with improvement programs in the mining industry has been that, after some initial success, performance tends to deteriorate back to pre-improvement program level in a relatively short time after the spotlight is switched off.

The “switching off” can take many forms, such as a logical end to the program, change of leadership personnel, change in business emphasis or a severe emotional event (e.g. retrenchment program, partial closure, industrial action).

The thing that appears to be missing from most improvement programs is sustainability. The lack of sustainability is costly as follow up programs tie up valuable resources over and over again. Often, the only benefits accrue to consultants, as it is relatively easy to prove a good return on the investment by showing impressive performance charts during the implementation of the program but not after completion.

The ideal improvement program shows significant early returns and continues through and beyond, i.e. it is sustainable.

There have been some notable improvement programs that have stood the test of time. Examples are Hamersley Iron and Comalco Aluminium in Tasmania. These companies put equal emphasis on the three elements that together ensure that work can be done effectively.

These three elements to ensure effective work are:

1. Technology;
2. Technical processes;
3. Social processes

In the mining industry, the fixation with technology and, to a lesser extent with the technical processes, have driven improvement programs to date.

Along with technology, these are the legs of a three-legged chair; each one necessary but not in itself sufficient to ensure the chair fulfils its function.

The systems management approach is to outline an improvement program that puts equal weight on these three elements and demonstrates the impact that each element has on the other.

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SYSTEMS MANAGEMENT

Work theory

What makes people work hard? (Work in this context is defined as intellectual work i.e. the exercise of discretion and not physical work.)

It is not because they are made to and it is not because they are given financial incentives. Our own industry is a great example where this has not been successful.

It is the prime duty of a manager to provide the conditions that release the peoples' full potential and creativeness into their work.

To clarify more fully the understanding of managerial work and to appreciate more fully the difference between the work of a manager and the work of an individual contributor, it is helpful to divide the work of a manager into 3 elements:

- The leadership of people;
- The scheduling of resources; and
- The use of technology

All 3 elements are intimately intertwined in the daily course of managerial work but can be conceptually separated. The work, which is unique to managers, is the leadership of people and this is addressed by:

- creation of environment of change;
- articulation of desired behavior of all employees;
- design and implementation of overarching people systems;
- training team members in leadership and team membership skills; and
- performing regular process audits

As part of the Systems Management approach the team members will have a better understanding of some core ideas and principles that have been successful in other organisations and they will become more aware of:

- The impact of leadership & team member behaviour on the outcome of tasks;
- How to understand & improve systems at work;
- The expectations of their role and work;
- The importance of clarity in assigning, receiving and recognising work & tasks; and
- How to sustain improvements in the workplace

Change philosophy

The business environment is never still. Changes occur in demand, technology and opportunity, which require changes in the way work is organised and carried out. This is necessary just to survive over time. The success or failure of the business is strongly influenced by people; the way they work, the way they are guided and their feelings about being part of a team.

Business is not just about understanding technology and finances, it is also about understanding people; how they feel about their work and what they are asked and want to do.

The Systems Management philosophy is predicated on our belief that people want to be constructive and creative and it is their environment and working relationships which influences how their energies are directed.

An organisation that treats its people like machines, constrained by petty rules and regulations that contradict common sense and a sense of fairness will fail.

Building trust is not a simple matter, what one person regards as fair or honest may not exactly correspond with another person's view. Understanding how people see the world and acting on this understanding is a key element of leadership. Understanding change in organisations requires a consideration of beliefs, a clear articulation of organisation theory and knowledge of what really is happening. Changing systems brings about changes in behaviour and hence the ways in which people work.

Systems changes which are sustainable are not simply technical matters that "can be knocked over in an afternoon". They require a manager to understand the present culture, what behaviour is desired and be able to predict the impact on team members.

Again, the Systems Management approach manages the change process through training the manager in the understanding of culture and leadership.

General propositions

The Systems Management approach is predicated on a number of general propositions about the business, the environment and the people who work in it. These propositions follow:

- The social and business environment is changing continuously and organisations in it need to change in order to survive. To prosper they must develop in every field of their activity and in particular they must continually improve management practices
- People are social animals. We are dependent for our survival on the coherence and maintenance of social groups
- People are not inherently resistant to change. They can and do accept and welcome change under circumstances in which the risks they perceive inherent in the change offer them an acceptable probability for improvement. It is understanding the circumstances from the perspective of those affected by the change that is important. Equally important is the need to recognise that for people to support change requires a commitment that is deeply felt
- People behave rationally through their own eyes. They interpret systems, symbols and behaviour in terms of their beliefs about the world they live in and what they believe to be the underlying intent. Consequently a leader must know these beliefs and perceptions and the interpretations which will be derived from them
- The environment we live in is chaotic. The longer into the future we can predict with accuracy, the safer we are. Accurate prediction is a significant advantage. The basic premise is that, in order to ensure that improvement is sustained, there needs to be an equal emphasis on both social and technical processes.

A case study

The behaviour of management in the coal industry, when confronted with severe downturns in profitability as is the present case, generally is described by one or more of the following:

- Cut cost, put head down and weather the storm;
- Acquire larger equipment and produce more;
- High grade the resource;
- Do nothing & hope the exchange rate stays down;

- Close the business; and
- Blame everyone and everything else for the situation.

Hence, the focus of survival “strategies” to date has been on external things (third parties, contractors, equipment, geological resource, etc) and not on internal things (people, systems, etc). With the drying up of capital some Companies have targeted technical process improvement alone as their saviour. These Companies generally win some initial improvement, which has not generally been sustainable.

In the world outside of coal, some Companies have put at least equal emphasis on social processes as technical process in their struggle to survive. A good example of this is the Aluminium smelting industry with Companies such as Alcoa and Comalco at the forefront.

In the early nineties, the key performance drivers at Comalco’s Bell Bay smelter showed the trends set out in Fig. 1:

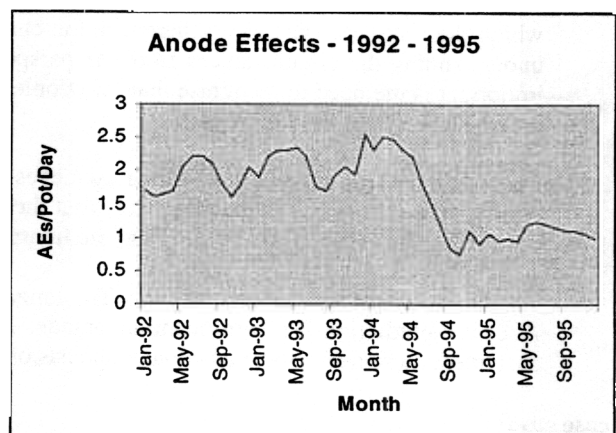
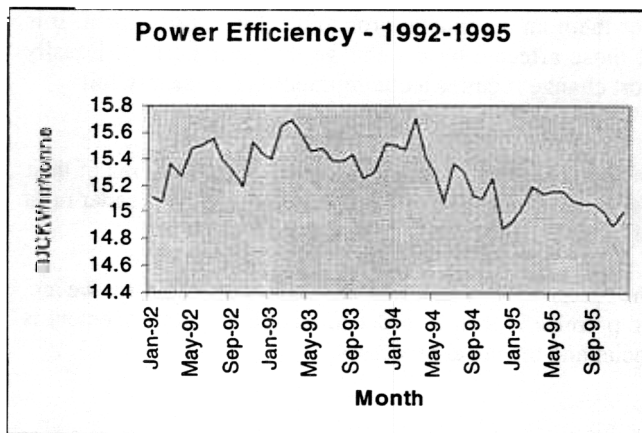
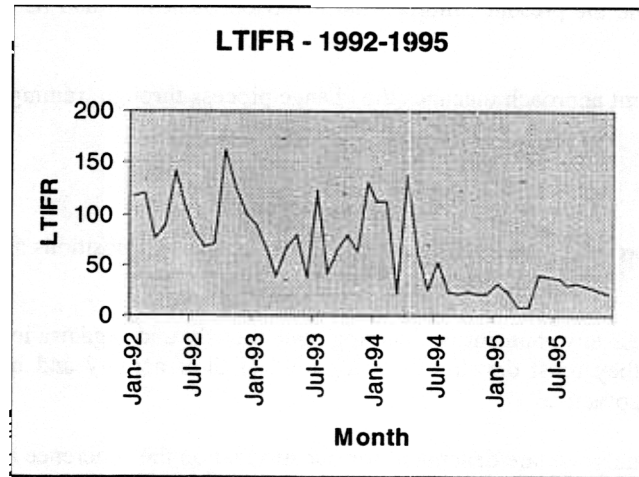


Fig. 1 – Performance record at Bell Bay Smelter 1992 - 1995

All of the indicators in Fig. 1 displayed similar characteristics during the period:

- Poor, erratic performance;
- A step change in improvement; and

- Stable performance at new level

The step changes in all cases occurred about the same time which was in mid-1994. The strategy and the implementation of the strategy for improvement started in mid-1990!

Between 1990 and 1994, all of the Company's systems were overhauled using a systems design methodology that demanded that all existing processes and systems, both technical and social, be understood fully and what beliefs were held by all stakeholders about the existing systems be known before any redesign was contemplated.

The work at Bell Bay and the resultant significant improvement confirm that the changing people's behaviour in a sustainable fashion takes time and cannot be achieved overnight. It also confirms that success has high rewards.

The big problem, of course, is that it is very rare to have patient and understanding shareholders as they were at Comalco. They usually demand a much tighter timeframe for improvement than a "couple of years".

To placate the owners and to also to quieten the inevitable critics in the workforce who usually increase in population and voice with time when progress is slow, it is necessary to incorporate a program that ensures early success. This is where early improvement in a technical process has a very important role. It not only gives immediate return on investment but also keeps the critics at bay.

Time is needed to not only understand the organisation's processes but to develop the competent systems to improve them. The right systems, along with the consistent behaviour of the organisation's leaders, will change behaviour over time. At Bell Bay, this took around three years. The emphasis needs to be on the three legs of the chair, technology, technical processes and social processes, if improvement is to happen first and then be sustained.

SUMMARY

In summary, the three elements to ensure effective work are:

1. Technology;
2. Technical processes; and
3. Human processes

These elements are the "legs" of a three-legged chair; each one necessary but not in itself sufficient to ensure the chair fulfils its function. The Improvement Programs through Systems Management approach is to outline a program that puts equal weight on these three elements and demonstrates the impact that each element has on the other.

The Systems Management approach is about sustainable improvement brought about through managed change. It is about helping leaders understand and predict behaviour, and helping team members understand their role better.

The intended outcome of this Systems Management approach will be:

- Establishment of improved standardised systems;
- Ownership of the systems;
- Efficient use of the resources (human and technological);
- Improved productivity; and
- Greater participation and job satisfaction;